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### Publication and lectotypification of the name *Stenocarpus sinuatus* (Proteaceae)

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The Firewheel Tree or Yiel-yiel is well known in cultivation and as a street tree, and admired for both its glossy dark green foliage and its spectacular radiating umbels of red and yellow flowers.

Most recent references (e.g. Foreman 1995; Henderson 2002) give its name as *Stenocarpus sinuatus* (Loudon) Endl., following Chapman (1991). Exceptionally Stanley & Ross (1986) and Harden (2002) cite the name as *Stenocarpus sinuatus* Endl.

The species epithet was first published by Loudon (1832), who utilised an Allan Cunningham manuscript name ‘*Agnostus sinuatus*’ in a list of plants growing

in England. Loudon pointed out that Cunningham’s generic name meant “unknown; provisional name”. However, Loudon accepted it, so it was not a nomen provisorium, but he did not provide a validating description. In the table of properties accompanying the list were symbols meaning “Evergreen tree”, “15 feet”, “ornamental” and “greenhouse”. The tabular format of Loudon’s publication is comparable with that of Sweet’s *Hortus Britannicus* which is ruled in Ex. 3 of Art. 32 as not providing validating descriptions. The generic-specific combination is thus a nomen nudum and invalidly published. There was a note accompanying

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Loudon's listing of 'Agnostus sinuatus': "This is the plant compared to an oak in the late notice of *Kew Garden, Gard. mag.* vol. vii p.687". This note does not provide a validating description, for two reasons. Firstly, the note referred to, in discussing Cunningham's collections, merely states "...another which may turn out a *Quercus*." Secondly, the last sentence of Art. 42.1 precludes using an earlier description or diagnosis to validate a descriptio generico-specifica.

So when was *Stenocarpus sinuatus* validated? In 1830 Brown described a quite different plant as *Stenocarpus cunninghamii* R.Br., and this name is still applied to a plant of Western Australia and the Northern Territory. Hooker (1846) described another plant as *Stenocarpus cunninghamii* Hook. and gave *Agnostus sinuatus* as a synonym. So *Agnostus sinuatus* was still invalid in this publication (Art. 34.1 (a)) and *Stenocarpus cunninghamii* Hook. was illegitimate (Art. 53.1). Endlicher (1848) accepted the name *Stenocarpus sinuatus* and referred back to Hooker's description of *Stenocarpus cunninghamii* Hook. Thus *Stenocarpus sinuatus* is validated in Endlicher and its type must be that on which Hooker based his description. Hooker mentioned several specimens on which his description was based, and also provided a diagnostic plate. A lectotype should be chosen from among these. The correct citation of the name of this species is *Stenocarpus sinuatus* Endl. (1848).

### Lectotypification

Hooker (1846) was very specific about the sources of his material. It had its origin in plants collected by Allan Cunningham in 1828 along the Brisbane River, Moreton Bay. These specimens were sterile and Cunningham was not sure what they were. He sent two rooted plants to England to "Mr Smith" who propagated a number of others from them. He also sent dried material to Robert Heward. In the meantime "T.Bidwill" [?J.C.Bidwill] had sent fruits (without seeds) to Hooker in 1843, and these were shown to Cunningham, who determined them as *Stenocarpus*. In August 1847 Hooker received from Messrs. Weeks and Day, from the greenhouse of the 'United Gardeners' Society', King's Road, Chelsea 'fine flowering specimens'. From these the plate in the *Botanical Magazine* was prepared, and the extensive validating description. Hooker noted that while the paper was in press he heard of additional flowering specimens in Edinburgh Botanic Garden (specimen received per Dr. Balfour) and at the Birmingham Botanic Garden per Mr Cameron (no specimen mentioned). Neither of these last two can be considered as providing potential syntypes, as they were received after preparation of the description.

As Cunningham's collections are sterile, and because Hooker described flowers and fruits, they are not ideal choices as lectotypes. Hooker's description is fulsome on flower characters, and thus the Weeks and Day specimen is the prime candidate for lectotype. Hooker

also described the fruit, obviously on the evidence of the Bidwill collection, and this should also be considered a syntype.

Only one specimen derived from cultivated material survives in Hooker's Herbarium in Kew. It is flowering, and bears the following annotations: 'Cult.' 'S.sinuatus Endl. V. 539', with a printed label 'FLORA AUSTRALIENSIS named by Mr. Bentham.', another 'S. sinuatus Endl.! *Stenocarpus Cunninghamii* Hook. non Br. Bot. Mag. tab. 4263 1847 t.7', a faint pencil annotation that seems to read 'Fl. des Serres' [ie referring to a dry glasshouse], and a 'Herbarium Hookerianum' stamp. This specimen is here designated as lectotype of *Stenocarpus sinuatus* Endl.

Two Cunningham collections from Moreton Bay survive, both sterile, and these should be considered to be residual syntypes. One is in Kew Herbarium (K), one in the Natural History Museum (BM).

The Kew specimen is annotated '5. *Stenocarpus sinuatus* Endl. D.C.XIX 451 *Stenocarpus Cunninghamii* Hook. Bot. Mag. t. 4263 (non R.Br.) *Agnostus sinuatus* A.Cunn. Brisbane River Moreton Bay New Holland A.Cunningham 193/1828' plus a printed label 'ALLAN CUNNINGHAM'S AUSTRALIAN HERBARIUM Presented by Robert Heward Esq. 1862'.

The BM collection (cited by Foreman 1995) is annotated 'Moreton Bay' and lacks a collector, but is thought to be an Allan Cunningham collection.

No Bidwill material has been located.

The synonymy, formally, is:

### *Stenocarpus sinuatus* Endl.

Genera Plantarum, Suppl. 4(2): 88 (1848). **Typus**: "Allan Cunningham, banks of the Brisbane River, Moreton Bay, 1828; T. Bidwill Esq., loc. cit., 1843 [fruits]; Weeks & Day, United Gardeners Society, Kings Rd, Chelsea, August 1847 [cultivated specimen]; Dr Balfour, Edinburgh Botanic Garden, 1848 [cultivated specimen]." – **Lectotypus** (designated here): *Anon.* [? *Weeks & Day*] s.n., s. dat., Cultivated (London) "S. sinuatus Endl. V. 539, Flora Australiensis named by Mr Bentham, S. sinuatus Endl.! *Stenocarpus Cunninghamii* Hook. non Br. Bot. Mag. tab. 4263 1847 t.7, Herbarium Hookerianum", K! – **Residual syntypi**: *A. Cunningham 193*, 1828, Brisbane River, Moreton Bay, New Holland "5. *Stenocarpus sinuatus* Endl. D.C.XIX 451 *Stenocarpus Cunninghamii* Hook. Bot. Mag. t. 4263 (non R.Br.) *Agnostus sinuatus* A.Cunn. ALLAN CUNNINGHAM'S AUSTRALIAN HERBARIUM Presented by Robert Heward Esq. 1862", K!; *Anon.* [? *Allan Cunningham*], s.dat., Moreton Bay, BM (fide Foreman, 1995, n.v.).

*Agnostus sinuata* Loudon, Hort. Brit. Suppl.1: 580 (1832), nom. nud., nom. inval.

*Cybele sinuata* (Loudon) Kuntze, Revis. Gen. Pl. 2: 578 (1891)

*Stenocarpus cunninghamii* Hook., Bot. Mag.: t. 4263 (1846), (as *cunninghami*), nom. illeg.

*Stenocarpus sinuosus* F.Muell., Fragm. 5: 154 (1866), nom. nud., nom. inval.

*Stenocarpus sinuosus* var. *integrifolius* F.Muell., Fragm. 5: 154 (1866) nom. nud., nom. inval., (as *integrifolia*)

It is worth noting that Chapman (1991) in listing many of these names, inadvertently attributed to Mueller (1866) two combinations that were never actually made, “*Stenocarpus sinuosus* F.Muell. var. *latifolium* F.Muell.” and “*S. sinuosus* var. *sectus* F.Muell.” Mueller actually described these taxa as varieties of *S. moorei* F.Muell., which is now considered synonymous with *S. salignus* R.Br. The Chapman combinations are at best invalid, not accepted by the author (he stated in the Introduction, p.xii, to the Australian Plant Name Index that he did not intend to make any formal nomenclatural actions). They are probably best treated as orthographic variants.

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## What is the gender of *Sphenotoma* (Epacridaceae)?

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The generic name *Sphenotoma* for a genus of 6–7 Western Australian Epacridaceae has been variously treated as feminine or neuter by different authors. The name was derived from two Greek words : *spheno* (m.) to connect or bind together, and *tomos* (m.) a slice or section. The gender of the compound word is fixed by the final part. So notionally the name is masculine. In Latin, *tomus* (book, volume, from the same root) is also masculine. So on the face of it, the generic name *Sphenotoma* should be masculine.

However the *International Code of Botanical Nomenclature* (Art. 62.1) states that gender of generic names is assigned by botanical tradition. That is, if the original author assigned the wrong gender and everyone followed him, then that overrides classical usage. What happened with *Sphenotoma*?

Sweet (1828) described only a single species *S. gracilis*. What does that say about the gender he was assigning? Unfortunately ‘*gracilis*’ is a Group B adjective (Stearn 1992) and the ending can signify either masculine or feminine gender, but not neuter (which would be *S. gracile*).

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What did later authors do?

- Lindley (1832) made the combination *S. capitatum* (neuter)
- Don (1834) made the combination *S. squarrosa* (feminine)
- Sonder (1845) made the combination *S. dracophylloides* (masculine, femine or neuter)
- Mueller (1883) made the combination *S. drummondii* (genitive, not relevant) and the combination *S. parviflorum* (neuter)
- Bentham (1869) put *Sphenotoma* in synonymy under *Dracophyllum* but gave the synonymous names neuter endings.
- Jacks (1970) and Newbey (1970) both treated it as neuter.
- Recent Western Australian checklists and censuses have treated *Sphenostoma* as neuter (see for example, Green, 1985; Paczkowska & Chapman, 2000); FloraBase website)
- APNI (Australian National Herbarium et al. 2004) treats the names as feminine (except 116631 *Sphenotoma gracile* (n.) which was taken from a WA source), following Arthur Chapman (1991).
- Watson & Dalwitz (2005) use the name *Sphenotoma gracile*, i.e., neuter.